

AMENDMENTS TO THE CLAIMS

Claim 1 (original): A well plate comprising:

at least one well, each well having a reservoir and a capillary lumen in fluid communication with said reservoir such that when a liquid is contained in said well, said liquid migrates at least part way up said capillary lumen due to capillary forces.

Claim 2 (original): The well plate of claim 1 wherein said capillary lumen is cylindrical shaped.

Claim 3 (original): The well plate of claim 1 wherein said capillary lumen is non-cylindrical shaped.

Claim 4 (original): The well plate of claim 1 wherein said capillary lumen is upright.

Claim 5 (original): The well plate of claim 1 wherein the capillary lumen is held at an angle.

Claim 6 (original): The well plate of claim 5 wherein said angle is from 5 to 50 degrees.

Claim 7 (original): The well plate of claim 1 wherein a lower end of said capillary lumen is positioned a distance above a bottom of said reservoir.

Claim 8 (original): The well plate of claim 1 wherein said capillary lumen has an enlarged lower end section.

Claim 9 (original): The well plate of claim 8 wherein said enlarged lower end section varies in diameter and has a maximum diameter at a lower tip.

Claim 10 (original): The well plate of claim 9 wherein said enlarged lower end section is linear shaped.

Claim 11 (original): The well plate of claim 10 wherein said lower end section expands at an angle between 1 to 70 degrees to an axis extending through said capillary lumen.

Claim 12 (original): The well plate of claim 9 wherein the enlarged lower end section is non-linear shaped.

Claim 13 (original): The well plate of claim 1 wherein the capillary lumen has a height less than a height of said well such that when a cover is attached atop said well plate, a gap is formed between the capillary lumen and the cover.

Claim 14 (original): The well plate of claim 13 wherein said gap ranges from 1 to 10 mm.

Claim 15 (original): The well plate of claim 1 wherein the capillary lumen has a height equal to a height or greater than the height of the at least one well.

Claim 16 (original): The well plate of claim 1 wherein said capillary lumen has an inner diameter ranging from 0.1 to 4.0 mm.

Claim 17 (original): The well plate of claim 16 wherein said capillary lumen has an inner diameter ranging from 0.5 to 3.0 mm.

Claim 18 (original): The well plate of claim 1 wherein said capillary lumen comprises a hydrophilic coating.

Claim 19 (original): The well plate of claim 1 wherein said capillary lumen comprises a hydrophobic coating.

Claim 20 (original): The well plate of claim 1 wherein said well has an effective diameter ranging from 0.2 to 20 mm.

Claim 21 (original): The well plate of claim 20 wherein said effective diameter ranges from 2 to 10 mm.

Claim 22 (original): The well plate of claim 1 wherein the well plate comprises at least a base and a top half containing said at least one capillary lumen.

Claim 23 (original): The well plate of claim 22 wherein said top half is an injection molded part and said base is a thin film joined to said top half to form each of said wells.

Claim 24 (original): The well plate of claim 1 wherein said capillary lumen is press fit into position.

Claims 25 (original): The well plate of claim 1 wherein said capillary lumen is integrally formed in a corner of each well.

Claim 26 – Claim 80 (canceled)

Claim 81 (new): An apparatus for acoustically ejecting a droplet of liquid comprising:
a well plate as recited in claim 1; and
an acoustic wave emitter positioned beneath said well plate, wherein said acoustic wave emitter is configured to eject a portion of said liquid in said capillary lumen.

Claim 82 (new): The apparatus of claim 81 further comprising:
a stage for supporting said well plate, wherein said stage is configured to move said well plate relative to said acoustic wave emitter.

Claim 83 (new): The apparatus of claim 81 wherein said acoustic wave emitter is configured to propagate a focused acoustic wave through a base of said well plate, then through said liquid contained within said capillary, and toward a free surface of said liquid within said capillary lumen.

Claim 84 (new): The apparatus of claim 81 further comprising:
a coupling fluid positioned between said well plate and said acoustic wave emitter.

Claim 85 (new): The apparatus of claim 81 wherein a lower end of said capillary lumen in said well plate is positioned a distance above a bottom of said reservoir.

Claim 86 (new): The apparatus of claim 81 wherein said capillary lumen in said well plate has an enlarged lower end section.

Claim 87 (new): The apparatus of claim 86 wherein said enlarged lower end section varies in diameter and has a maximum diameter at a lower tip.

Claim 88 (new): The apparatus of claim 87 wherein said enlarged lower end section is linear shaped.

Claim 89 (new): The apparatus of claim 82 further comprising:
a computer, which is in communication with said acoustic wave emitter and said stage, configured to align a first capillary lumen in a first well with said acoustic emitter, propagating a first acoustic wave through said first capillary lumen to eject a first droplet of liquid out of said first capillary lumen, displace said well plate to align a second capillary lumen in a second well with said acoustic emitter, propagating a second acoustic wave through said second capillary lumen to eject a second droplet of liquid out of said second capillary lumen.

Claim 90 (new): A method of acoustically ejecting a droplet of liquid comprising the steps of:

providing a well plate as recited in claim 1; and
ejecting a portion of a first liquid contained within a first capillary lumen in a first well.

Claim 91 (new): The method of claim 90 further comprising the step of:
ejecting a portion of a second liquid contained within a second capillary lumen in a second well.

Claim 92 (new): The method of claim 90 wherein prior to said ejecting step, said first liquid is at a first liquid level within said first capillary lumen, after said ejection step, said first liquid arrives at a second liquid level.

Claim 93 (new): The method of claim 92 further comprising the step of:
allowing said first liquid to recover to said first liquid level within said first capillary lumen.

Claim 94 (new): The method of claim 93 further comprising the step of:
ejecting a second portion of said first liquid contained within said first capillary lumen.

Claim 95 (new): The method of claim 90 wherein the step of ejecting a portion of a first liquid comprises propagating an energy wave towards a free surface of said first liquid contained within said first capillary lumen in said first well to force a portion of said first liquid contained within said first capillary lumen to eject from said free surface.

Claim 96 (new): The method of claim 90 wherein the step of ejecting a portion of said first liquid comprises propagating a first acoustic wave into said first capillary lumen in said first well to eject a portion of said first liquid contained within said first capillary lumen.

Claim 97 (new): The method of claim 96 further comprising the steps of:
displacing said well plate relative to an acoustic wave emitter; and
propagating a second acoustic wave into a second capillary lumen in a second well to eject a portion of a second liquid contained within said second capillary lumen.

Claim 98 (new): The method of claim 90 wherein the step of ejecting a portion of a first liquid comprises propagating a focused acoustic wave through a base of said well plate, into said

first capillary lumen through said first liquid contained within said first capillary lumen, and towards a free surface of said first liquid contained within said first capillary lumen.

Claim 99 (new): The well plate of claim 1 wherein each of said capillary lumen is configured from a capillary positioned within each of said well.

Claim 100 (new): The well plate of claim 99 wherein said capillary is removably positioned within said well.

Claim 101 (new): The well plate of claim 100 wherein said well plate comprises two or more wells and two or more capillaries, said two or more capillaries are interconnected with each other.

Claim 102 (new): The well plate of claim 101 wherein each of said capillaries is cylindrically shaped.

Claim 103 (new): The well plate of claim 101 wherein each of said capillaries is non-cylindrically shaped.

Claim 104 (new): The well plate of claim 101 wherein a lower end of each of said capillaries is positioned a distance above a bottom of said reservoir.

Claim 105 (new): The well plate of claim 101 wherein each of said capillary lumens has an enlarged lower end section.

Claim 106 (new): The well plate of claim 105 wherein each of said enlarged lower end section varies in diameter and has a maximum diameter at a lower tip.

Claim 107 (new): The well plate of claim 101 wherein each of said capillaries has a height less than a height of each of said corresponding wells.

Claim 108 (new): The well plate of claim 101 wherein each of said capillaries has an inner diameter ranging from 0.1 to 4.0 mm.

Claim 109 (new): The well plate of claim 101 wherein each of said capillaries has an inner diameter ranging from 0.5 to 3.0 mm.

Claim 110 (new): The well plate of claim 101 wherein each of said capillaries comprises a hydrophilic coating.

Claim 111 (new): The well plate of claim 101 wherein each of said capillaries comprises a hydrophobic coating.

Claim 112 (new): The method of controlling a level of source liquid in a well plate comprising the steps of:

providing a well plate of claim 100; and

ejecting a portion of said liquid contained in said capillary.

Claim 113 (new): The method of claim 112 wherein said ejecting step comprises propagating an acoustic wave into the capillary lumen of said capillary to force a portion of said liquid contained in said capillary lumen to eject from a free surface of said liquid contained in said capillary lumen.